

ATOMIC ENERGY *newsletter*®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH
ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

August 16, 1960
Vol. 24...No. 1

Dear Sir:

Two contracts for continued operation of USAEC facilities by their present contractors have been renewed by the Commission. Goodyear Atomic Corp. has been given a four-year extension of its USAEC contract to operate the Portsmouth gaseous diffusion plant in Pike county, Ohio. The contract with Goodyear Atomic, a subsidiary of Goodyear Tire & Rubber Co., was extended through June 30, 1965; a prior extension of the company's original contract was to expire June 30, 1961. The other contract renewal was with Westinghouse Electric Corp. for operation of the Commission's Bettis atomic power laboratory, Pittsburgh, and related research and development facilities at the USAEC's national reactor testing station, Arco, Idaho. The Westinghouse contract, which was renewed for three years, covers an estimated annual cost of some \$50 million for the work. (Westinghouse has been the Bettis contractor since 1949. The laboratory and its related facilities handle naval reactors, development related to the Shippingport nuclear power station, etc. Goodyear has operated Portsmouth from its start-up. It is one of the USAEC's three installation for large scale separation of uranium-235 by the gaseous diffusion process.) (Other CONTRACT NEWS, p.2 this LETTER.)

Consolidated Beryllium, Ltd., have bought the Milford Haven beryllium works of the U. K. Atomic Energy Authority. The works previously had been operated by Murex Ltd., on an agency basis. Consolidated Beryllium, which is managed by Imperial Smelting Corp., will take over on September 8, 1960 and operations will continue on a reduced scale. (Other MANUFACTURERS' NEWS, p.3 this LETTER.)

Increased nuclear business being done by General Electric Co. has prompted the setting up of a project operations section at the company's atomic power equipment department, San Jose, Calif. The plant there has some eleven reactor projects in design, under construction, or nearing completion according to George White, general manager of the department. In addition it has numerous contracts for nuclear components, irradiation services, and advanced reactor design studies. The new section, under Vaughn D. Nixon, will handle a job from the time an order for it is received until it is turned over to the customer; it will also prepare propositions and estimates. (Other BUSINESS NEWS, p.3 this LETTER.)

Price of carbon-14 has been reduced from \$13 to \$9.50 a millicurie by the primary producer, the USAEC's Oak Ridge National Laboratory. The reduction, now in effect, was said to be the result of lowered production costs. On June 30, 1959 a cut of 50% had been made by the Laboratory in the price of this material, which was the first reactor-produced radioisotope made commercially available by the USAEC. Since August, 1946, more than 93,000 millicuries of the material have been shipped from Oak Ridge. (Other PRODUCT NEWS, p.3 this LETTER.)



ATOMIC ENERGY CONTRACT NEWS...

CONTRACT REVISIONS: Research and development phase of the gas-cooled prototype nuclear power plant of the East Central Nuclear and Florida West Coast Nuclear Group has now been reoriented toward early development of beryllium-clad fuel elements instead of stainless-steel for first core loading. As a result of this reorientation, the two utility sponsoring groups have advised the USAEC of their intention to submit by Jan. 1, 1961 a modified proposal for the project leading to a new contract under which the Commission supports research and development and the utility constructs the plant. This would provide greater assurance that the prototype would be built by eliminating certain contingencies in the present contract. (Development of the advanced type of gas-cooled heavy water-moderated reactor on which the original proposal of the utilities was based has encountered technical difficulties. Whether these difficulties can be overcome by the switch to beryllium-clad fuel elements remains to be ascertained. The new research required on this project will delay completion of the plant, originally scheduled for July 1963, by from one to two years.)

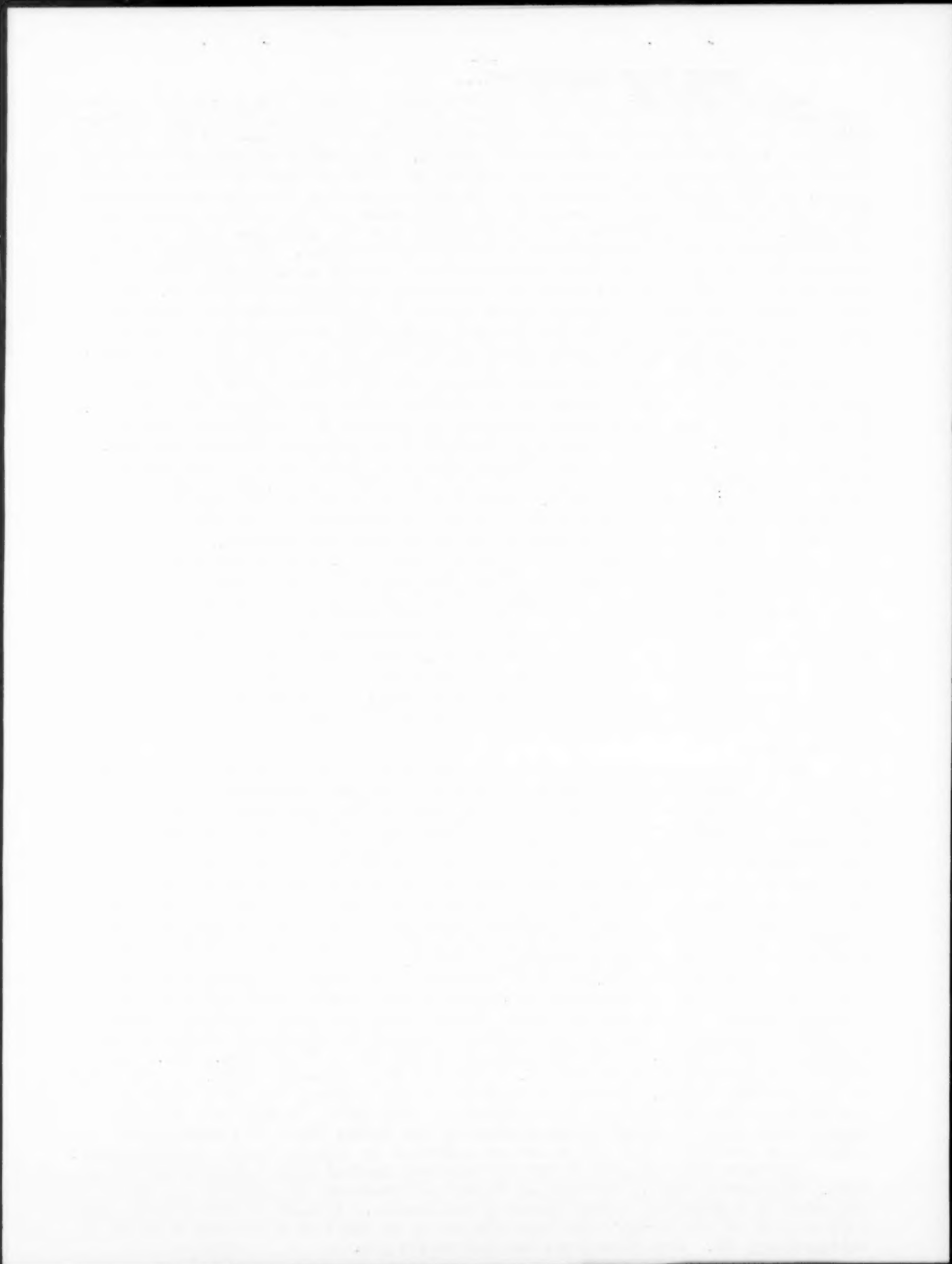
CONTRACTS LET: Proposal of The Martin Co., Baltimore, to supply a packaged nuclear power plant for McMurdo Sound in Antarctica at a fixed price of not more than \$3,950,678, has been selected by the USAEC as basis for contract negotiations. Martin's proposal was one of three submitted in response to a Commission invitation issued last June. Proposals were also received from Combustion Engineering, Inc., New York, and Alco Products, Inc., Schenectady, N.Y. Under terms of the contract, Martin will design a 1500 electric kw reactor, and fabricate, assemble and test operate the plant at McMurdo Sound. Reactor will be of the pressurized water type, moderated and cooled with light water. It will be assembled at the factory in "packages" so that it may be shipped by air to the site for erection.

The Martin Co. (above) and Lockheed Aircraft Corp. were selected by National Aeronautics and Space Administration (NASA) for negotiation of 6-month study contracts on the requirements of a nuclear rocket flight test program. Some twelve firms had bid for the studies. The work to be done under the two studies, which will cost \$100,000 apiece, will include system preliminary design, development programming, planning of test and tracking facilities, schedules, and safety factors for the reactor in-flight test system. (Development of a nuclear-powered space rocket, Project Rover, is a joint NASA-USAEC program. The Commission's Los Alamos scientific laboratory handles work on the reactor; NASA the task of integrating the reactor into engines and a space vehicle. It is hoped that the first flight may be made by 1965.)

Some three contracts valued at more than \$3.8 million have been received from the USAEC by General Electric Co.'s atomic power equipment department, San Jose, Calif. They cover the irradiation of representative fuel assemblies of the type to be used in the nuclear reactor of the N.S. Savannah; exploring performance of low enrichment uranium oxide fuel; and continued investigation of control rod materials. Test irradiation of the fuel assemblies, a program extending over a two-year period, will simulate the environmental conditions of the nuclear ship reactor. The study on performance limits of low-enrichment uranium oxide fuel is aimed at development of an economic long-life fuel for boiling water reactors. Study of the physical and mechanical properties of control rod materials will be continued by GE under extension of its research and development contract.

Phillips Petroleum Co. has been selected by the USAEC as operator of the 20,000-40,000 thermal kw experimental organic cooled reactor to be built at the national reactor testing station, Arco, Idaho. Phillips, which operates a number of USAEC facilities at the testing station, prepared the conceptual design of the organic cooled reactor. Architect-engineer on the job is Fluor Corp., Ltd., Los Angeles. Construction contractor, C. F. Braun & Co., Alhambra, Calif., started work on the job this Spring. Initial criticality of the reactor, for which Congress appropriated some \$6 million, is scheduled for late 1962. It will be a flexible experimental facility aimed at development by the middle 1960s of economically competitive reactors which are cooled and moderated by organic fluids (hydrocarbons).

Contract with value of \$1,700,000 has been awarded High Voltage Engineering Corp., Burlington, Mass., by National Bureau of Standards, Washington, for construction of a microwave linear electron accelerator. It will be installed in late 1962 as part of the Bureau's new laboratories to be built on a 550 acre site at Gaithersburg, Md. Some four firms had bid on the job.



NEW PRODUCTS, PROCESSES, INSTRUMENTS...

NEW PRODUCTS: New portable laboratory monitor is now offered by this firm for detection of radiation visually and aurally. Meter with five scale ranges indicates counts per minute; loudspeaker is for aural monitoring. --Picker X-Ray Corp., White Plains, N.Y.

Punch tape system now offered by this company is for use in conjunction with its ND-101 analyzer. Consisting of a control unit, tape perforator and tape reader the system allows read out on punch tape and read back into the memory with a previously punched tape. --Nuclear Data, Inc., Madison, Wisc.

New multi-purpose air sampling instrument which automatically collects samples on a paper tape, can make continuous gas and radioactive particle sampling. Accessories include scintillation or Geiger counter; monitoring attachments may be attached to recorders or alarm circuits to automatically warn of high levels of radiation. The 20-lb. instrument is designed for year round operation indoors or out without modification. Sampling intervals may be chosen from once a minute to once every two hours with the standard timer furnished. Air samples are drawn through the tape at approximately 14-liters per minute. --Gelman Instrument Co., Chelsea, Mich.

PRODUCT NEWS: Fuel element billets for the New Production Reactor (NPR) will be produced by the USAEC in its own facilities, the Commission has decided. The NPR is now under construction at Hanford Works, Washington. Invitations had been issued May 2, 1960 for production of the billets in privately-owned facilities. Proposals had been made by Engelhard Industries, Inc.; Nuclear Metals Div., National Lead Co.; Atomic Fuel Dep't., Westinghouse Electric Corp.; and jointly by Mallinckrodt Chemical Works, and Olin Mathieson Chemical Corp. After an analysis of the bids, the USAEC decided they exceeded the cost of producing the billets in its own facilities. The Commission said its costs were adjusted to include costs not normal to government operations but common to commercial enterprises. The Commission, through industrial contractors, operates large seed materials processing plants at Fernald, Ohio, and Weldon Spring, Mo., where the billets will be produced.

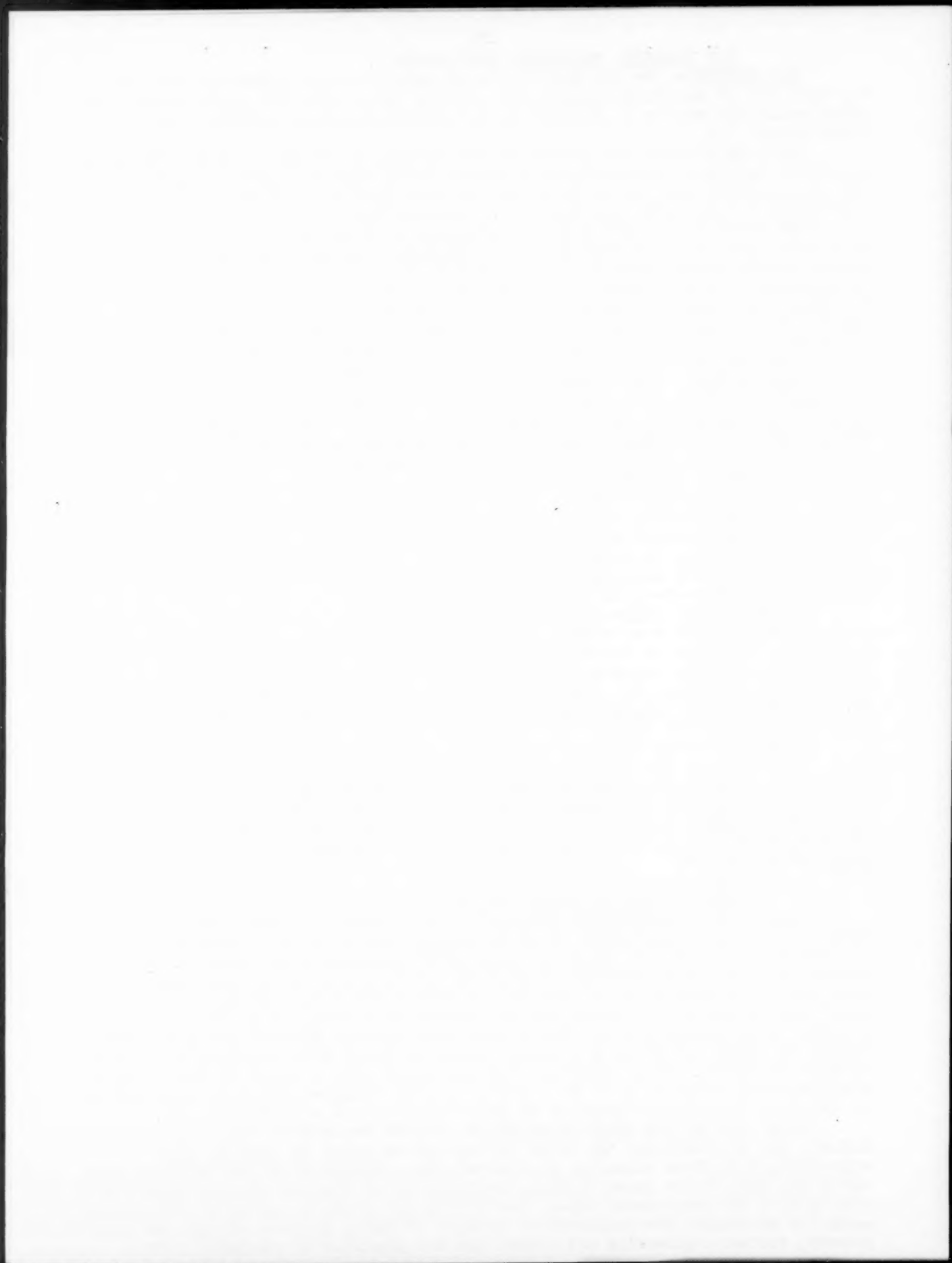
MANUFACTURERS' NEWS: First West Coast fabrication plant of Brush Beryllium Corp., Cleveland, has been opened. Located at Hayward, Calif., the plant will service western customers in the nuclear, aircraft, missile and other fields. The company also plans to relocate and expand its beryllium rolling plant at the Brush Pennrold Div., Reading, Pa. New plant, now under construction at Shoemakersville, Pa., will double the company's production capacity for wrought products from beryllium copper and other alloys.

High speed steam by-pass valve actuating system will be supplied by CompuDyne Corp., Hatboro, Pa., for the nuclear power reactor now being built near Sioux Falls, S. Dakota. Allis-Chalmers Manufacturing Co. is prime contractor for the plant, which will be operated by Northern States Power Co.; Bailey Meter Co. is providing the overall pressure control system. The CompuDyne units will be part of this overall pressure control system; steam conditions at the by-pass valve will be 525 psi gauge and 825 deg. F.

NEWS OUTSIDE THE UNITED STATES...

CANADIAN-U.S. COOPERATIVE PROGRAM: Atomic Energy of Canada, Ltd., and the USAEC have signed a "memorandum of understanding" providing for an expanded program of cooperation in the development of heavy water moderated power reactors. The program provides for an exchange of detailed information on heavy water-moderated power reactors; cooperation in research and development work; exchange of personnel; mutual use of pertinent research and development facilities; and provision for transfer of certain materials. The program also includes research and development work by the USAEC specifically directed toward the heavy water reactors to be constructed by Canada. This particular work may extend over a period of five years at a maximum cost to the U. S. of \$5 million. A joint technical board is being set up to advise on the over-all progress of the program, future requirements, etc.

RULES FOR NUCLEAR SHIPS ESTABLISHED: Lloyd's Register of Shipping, London, England, has now published the first "classification rules for nuclear ships", emphasizing that these rules are provisional only. Lloyds noted that adequate provision was made in the rules allowing designers to put forward original ideas. In setting down the provisional rules, the society gave specific and detailed requirements for materials, the longitudinal strength of hulls, pressure vessels and components, reactor engineering and control and the provision of emergency power.



ATOMIC ENERGY PATENT DIGEST...

PATENTS ISSUED August 2, 1960 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS:

(1) Variable spaced nuclear reactor fuel assembly. Ralph J. Gimera, Edward F. Weisner, Joseph R. Wetch, inventors. No. 2,947,678 assigned to North American Aviation, Inc. (2) Method of studying subsurface formations. Edmond F. Egan, Gerhard Herzog, Alexander S. McKay, inventors. No. 2,947,869 assigned to Texaco, Inc. (3) Radiation survey method. John W. Merritt, inventor. No. 2,947,870 issued to inventor of record. (4) Apparatus for determining the composition and thickness of thin layers. Herbert Friedman, inventor. No. 2,947,871 issued to inventor of record.

PATENTS ISSUED August 2, 1960 to GOVERNMENTAL ORGANIZATIONS: (1) Means and method for producing a vacuum. Michael A. Otavka, inventor. No. 2,947,465 assigned to USAEC. (2) Centrifuge end cap. Jesse W. Beams, Leland B. Snoddy, inventors. No. 2,947,471 assigned to USAEC. (3) Centrifuge apparatus. Charles Skarstrom, Karl Cohen, Harold C. Grey, inventors. No. 2,947,472 assigned to USAEC. (4) Method for making fuel elements. Leonard W. Kates, Robert W. Campbell, Raymond H. W. Heartel, inventors. No. 2,947,080 assigned to USAEC. (5) Complex fluorides of plutonium and an alkali metal. Glenn T. Seaborg, inventor. No. 2,947,601 assigned to USAEC. (6) Ternary alloys of uranium, columbium, and zirconium. Frank G. Foote, inventor. No. 2,947,621 assigned to USAEC. (7) Method of making wire fuel elements. John L. Zambrow, inventor. No. 2,947,676 assigned to USAEC. (8) Preparation of alkyl pyrophosphate extractants. Charles A. Levine, William E. Skiens, George T. Moore, inventors. No. 2,947,774 assigned to USAEC. (9) Control for isotope separating apparatus. Howard W. Brackney, inventor. No. 2,947,867 assigned to USAEC. (10) Magnetic grid. Richard F. Post, inventor. No. 2,947,902 assigned to USAEC.

PATENTS ISSUED August 9, 1960 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS:

(1) Heat treatable alloys of titanium or zirconium. Leroy D. Resnick, inventor. No. 2,948,608 assigned to Chicago Development Corp., Riverdale, Md. (2) Irradiation process. Elliott J. Lawton, inventor. No. 2,948,666 assigned to General Electric Co. (2) Delayed gamma radiation log of oxygen. Richard L. Caldwell, Stanley E. Turner, inventors. No. 2,948,810 assigned to Socony Mobil Oil Co., Inc. (3) Neutron production by alpha disintegration of boron-10. Tom W. Bonner, Richard L. Caldwell, inventors. No. 2,948,811 assigned to Socony Mobil Oil Co., Inc. (4) Circuit for Geiger counters. Halsey P. Quinn, inventor. No. 2,948,812 assigned to Tung-Sol Electric, Inc., Newark N.J.

PATENTS ISSUED August 9, 1960 to GOVERNMENTAL ORGANIZATIONS: (1) Centrifuges. Jesse W. Beams, Leland B. Snoddy, inventors. No. 2,948,572 assigned to USAEC. (2) Fused salt process for recovery of values from used nuclear reactor fuels. Raymond H. Moore, inventor. No. 2,948,586 assigned to USAEC.

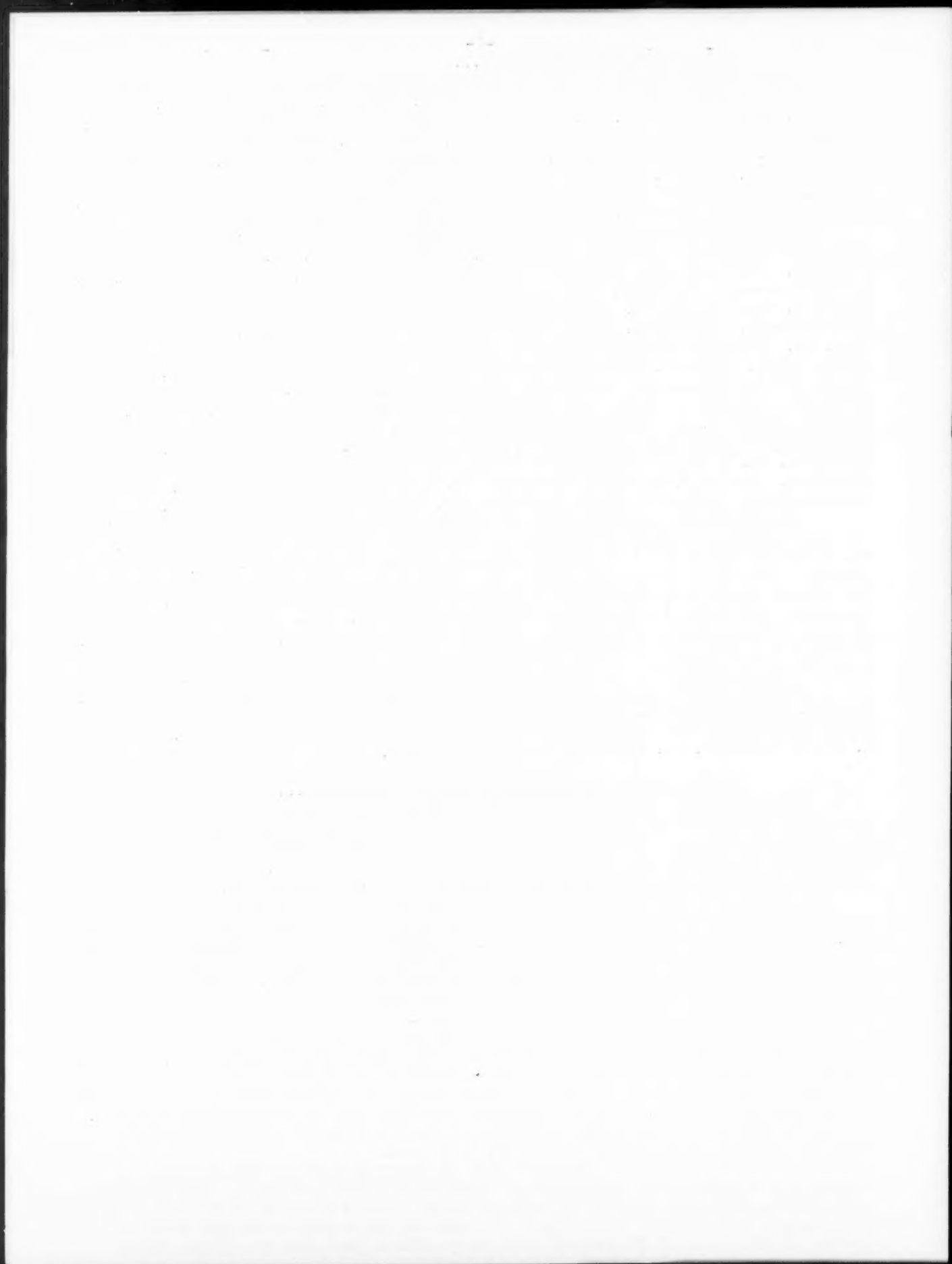
RAW MATERIALS...prospecting, mining, marketing...

UNITED STATES: Susquehanna-Western Corp., Denver, will build uranium ore processing plant for the USAEC under recent contract agreement made by the Commission with the company. The \$2 million plant of Susquehanna-Western will be built at Falls City, Texas, and will process some 200 tons of ore per day. The USAEC purchase contract given the company guarantees a market for its output to Dec. 31, 1966.

Discovery of a way to use acids in recovering beryllium oxide from ores found in the Topaz Mountain area of Utah has been jointly disclosed by Beryllium Resources, Inc., Los Angeles, and Brush Beryllium Co., Cleveland. Beryllium Resources has been doing intensive prospecting and staking in the Topaz Mountains, scene of current activity prompted by recent large findings of beryllium minerals. Brush Beryllium has reported the recovered material is beryllium hydroxide, with quality equaling that it is currently producing from African ores.

CANADA: Rio Tinto Canadian Exploration has now taken over for beryllium mineral exploration a property on a working option basis from Ventures, Ltd. Current investigations by Rio Tinto are being concentrated on the identification of the beryllium bearing minerals. If the mineral lends itself to economic mining, it is planned to use open pit methods. The main deposit, which is said to be over some 2,400-ft. in length, has an average width of 60-ft. and is estimated to contain over 9,000 tons per vertical foot grading 0.44% beryllium oxide.

Faraday Uranium Mines, Bancroft area producer in Southeastern Ontario, is maintaining uranium oxide production of about 65,000-lbs. per month, company executives state. The mill is said to be handling an average of 1,500 tons daily on a five day per week basis. The company has reported gross production the second quarter of this year of \$2,359,000 with net profit of \$484,000 or 11¢ per share.



NEW BOOKS & OTHER PUBLICATIONS...

Reactor Handbook; Vol. 1, Materials. First volume of the USAEC's revised and enlarged four-volume second edition of this handbook, originally published in 1955. Other three volumes of this second edition are scheduled to be published by Spring, 1961.--Interscience Publishers, Inc., 250 Fifth Ave., New York. (\$36.50 for Vol. 1, or \$80 to \$90 for complete set of four volumes.)

Sixth Annual Report, U. K. Atomic Energy Authority. Covering the period April 1, 1959 to March 31, 1960 the report notes steady progress in work ranging from the development of reactors and the production of reactor fuels to research and development over a wide field. Of interest also is the Authority's estimate for 1960-61 of a net expenditure of some £93.3 million compared with £92.4 million for 1959-60.--H. M. Stationery Office, London, England. (6s.)

Mineral Facts and Problems. Second edition (1960), consisting of 87 chapters each covering a mineral or metal. Bureau of Mines Bulletin No. 585. 1,061 pages.--Superintendent of Documents, Wash. 25, D. C. (\$6.00)

Selected Reactors of the Power Reactor Demonstration Program. Literature search with title, author, publication date, price and availability source for 314 reports published on ten U. S. power reactor projects under construction or planned. No. TID-3556. (75¢).....Chronic Effects of Low-Level Radiation on Protein and Amino Acid Requirements. Study made by B. H. Ershoff and others of Western Biological Laboratories for U. S. Air Force. 54 pages. No. PB-161501. (\$1.50).....Calculation of Absorbed Dose. Equations and tabular data for calculating the absorbed dose in rads when conditions of exposure to radiation are known. Work by C. H. Cheek, V. J. Linnenbom, Naval Research Laboratory, Wash. 34 pages. No. PB-161259. (\$1).....Community Impact of Peaceful Applications of Atomic Energy. Report by the USAEC based on study made for the Commission by the American Municipal Association. 80 pages. No. TID-8202 (\$1)---Office of Technical Services, Wash. 25, D. C.

Recent Research on Controlled Thermonuclear Fusion. Work at Univ. of Calif., Princeton University, and Oak Ridge National Laboratory. 80 pages. In English, with summaries in English, French, Russian, and Spanish. (\$1).....Disposal of Radioactive Wastes. First of two volumes of proceedings of UNESCO-IAEA sponsored conference Nov. 16-21, 1959. 604 pages. In language of presentation, with abstracts in English, French, Russian and Spanish. (\$6).....Large Radiations Sources in Industry. First of two volumes of proceedings of IAEA-sponsored conference presentation with abstracts in English, French, Russian and Spanish. (\$4.50).....Use of Radioisotopes and Supervoltage Radiation in Radioteletherapy. Report of a study group convened by IAEA and WHO in Vienna Aug. 3-5, 1959. 88 pages. (\$1.50).....Application of High Energy Radiations in Therapy. First issue of a non-periodical series of information material. In English. 86 pages. (\$1)---International Atomic Energy Agency, Karntnerring 11, Vienna, Austria.

Small Reactors for Northern Canada. Study made by atomic energy division of Canadian Westinghouse Co., Ltd., Hamilton, Ont., for Atomic Energy of Canada, Ltd. A comparison of the cost of operating small U. S. reactor types using enriched uranium for fuel, with the estimated cost of an oil-fueled electricity and heating plant proposed for Frobisher Bay on Baffin Island by Montreal Engineering Co., Ltd. (The plants compared would each produce 2,000 kw of electricity and 17,500 kw of heat for a population of 1,500. The report shows the annual cost of operating such a small nuclear power plant on Baffin Island would be 22% greater than the annual cost of operating a conventional oil-burning power plant.) A.E.C.L. Publication No. 1045.--Scientific Documents Office, Atomic Energy of Canada, Ltd., Chalk River, Ontario, Canada. (\$1.50)

Possibilities of Using Nuclear Energy for Gasifying Coal. James P. McGee and Sidney Katell, Bureau of Mines, describe a conceptual design of system to use nuclear heat for coal gasification and apparatus built to simulate operation of a high-temperature nuclear system. Information circular No. 7965. (15¢)---Superintendent of Documents, Wash. 25, D. C.

Sincerely,

The Staff
ATOMIC ENERGY NEWSLETTER

August 16, 1960